

# **Educational Planning and Assessment System (EPAS) College Readiness Standards Alignment to Program of Studies**

## **Introduction Test: Science**

### **Kentucky's *Program of Studies* (POS) and the College Readiness Standards (CRS)**

The *Program of Studies*, Kentucky's mandated curriculum for all Kentucky schools, is a comprehensive document. Therefore, the CRS is embedded within the *Program of Studies*. While there has been an effort to align the standards as closely as possible in this document, readers will see that in some cases, there is not an exact match for the CRS within the POS. In these cases, the Kentucky Department of Education has found that the skill or skills identified within the CRS are often a component of a more complex POS standard and that the POS standard to which we have aligned the CRS may include the expectation that students demonstrate a variety of other, related skills.

In each tested area, educators should note the importance of reading and critical thinking skills necessary for students to be successful on the tests. Likewise, it is important to note that, from grade to grade, some standards may be the same or very similar. In these cases, teachers are expected to continually refine instruction so that students use increasingly complex skills to achieve the standards for each consecutive grade level.

### **How to Use the Document**

This document is divided into tables with four columns. The left-hand column contains the College Readiness Standards (CRS) and descriptions of the skills and knowledge associated with what students are likely to know and be able to do based on their EXPLORE, PLAN and ACT test scores. The second column contains the science content standards from the *Program of Studies* that most closely match each College Readiness Standard. The third column contains the mathematics content standards from the *Program of Studies*, and the last column contains the language arts content standards. Mathematics and language arts standards are included due to the nature of the ACT science exam.

Standards in the POS science column may contain sections that are underlined. This is to demonstrate where the POS standard is most closely aligns with the CRS.

Teachers may use this document to link instruction with assessment. By identifying the connections between the CRS and the POS, educators may better understand how the ACT College Readiness Standards are embedded within Kentucky's curriculum.

Example

**CRS Science**

SIN 301 (16-19) Understand the methods and tools used in a simple experiment.

**POS Science**

SC-7-MF-S-1 Students will use appropriate tools and technology (e.g., timer, meter stick, balance, spring scale) to investigate the position, speed and motion of objects

Based upon this example, one can see that the main component of the POS standard (students will use appropriate tools and technology) most closely aligns with the CRS standard (understand methods and tools), but is specific to the topic of motion.

**CRS Science**

IOD 403 (20-23) Translate information into a table, graph, or diagram.

**POS Science**

SC-5-EU-S-6 Students will use a variety of models and graphic representations to obtain and organize data in order to compare the major components of our solar system.

In this example, both standards ask students to demonstrate the translation of information; the CRS statement is much more general than what the POS skill standard states. While these two standards do not provide an exact match, the POS standard identified most closely matches the CRS.

**The Science Test**

The EPAS Science test is “designed to assess the knowledge and thinking skills, processes, and strategies students acquire in...science courses. These skills include analyzing and interpreting data, comparing experimental designs and methods, comparing assumptions underlying experiments, making generalizations, and identifying and evaluating conflicting points of view....The intent is to present students with a situation to engage their reasoning skills...” The ACT science test is not a test of content knowledge; however, the questions presented are in the context of science.

**Supplemental Information**

The specifications for the science test on the EXPLORE, PLAN and ACT can be found in the supplemental information section for science on page 111.

*Note: For printing purposes, the alignment document will be on legal-sized paper.*

**Reference**

ACT. (2005) *Connecting College Readiness Standards to the Classroom: For Science Teachers*

SCIENCE TEST  
POS/CRS Alignment  
Strand 1--Interpretation of Data (IOD)

College Readiness Standards	Science Program of Studies	Math Program of Studies	Language Arts Program of Studies
Score Range 13-15			
Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g. a table or graph with two or three variables; a food web diagram)	<p><b>SC-5-MF-S-2</b> <u>Students will create and interpret graphical representations in order to make inferences and draw conclusions.</u></p> <p><b>SC-5-EU-S-2</b> <u>Students will create/analyze/explain representations that illustrate the circulation of water (evaporation and condensation) from the surface of the Earth, through the crust, oceans, and atmosphere (water cycle).</u></p> <p><b>SC-6-UD-S-3</b> <u>Students will describe and represent (e.g. construct a chart, diagram, or graphic organizer) relationships between and among levels of organization</u> for structure and function, including cells, tissues, organs, organ systems, organisms (e.g., bacteria, protists, fungi, plants, animals) and ecosystems.</p> <p><b>SC-H-STM-S-3</b> <u>Students will construct and/or interpret diagrams</u> that illustrate ionic and covalent bonding.</p>	<p><b>MA-4-G-S-CG2</b> Students will locate points on a grid.</p> <p><b>MA-4-DAP-S-DR4</b> Students will analyze and make inferences from data displays (e.g., drawings, tables/charts, tally tables, pictographs, bar graphs, circle graphs, line plots, Venn diagrams).</p> <p><b>MA-5-G-S-CG2</b> Students will locate points on a grid.</p> <p><b>MA-5-DAP-S-DR4</b> Students will analyze and make inferences from data displays (e.g., drawings, tables/charts, tally tables, pictographs, bar graphs, circle graphs, line plots, Venn diagrams, line graphs).</p> <p><b>MA-6-G-S-CG1</b> Students will identify and graph ordered pairs on a positive coordinate system, identifying the origin, axes and ordered pairs.</p> <p><b>MA-7-G-S-CG1</b> Students will identify and graph ordered pairs on a coordinate system, identifying the origin, axes and ordered pairs.</p> <p><b>MA-8-G-S-CG1</b> Students will identify and graph ordered pairs on a coordinate system, identifying the origin, axes and ordered pairs; apply graphing in the coordinate system to solve real-world problems.</p>	<p><b>EL-11-DIU-S-5</b> Students will make text-based inferences; state generalizations; draw conclusions based on what is read.</p> <p><b>EL-11-DIU-S-7</b> Students will demonstrate understanding of informational passages/texts:</p> <p>a) locate key ideas, information, facts or details b) use information from text to state and support central/main idea c) use information from texts to accomplish a specific task or to answer questions d) use text features and visual information (e.g., maps, charts, graphs) to understand texts</p>

		<b>MA-HS-AT-S-EI5</b> Students will solve an equation involving several variables for one variable in terms of the others.	
Identify basic features of a table, graph, or diagram (e.g. headings, units of measurement, axis labels)	<b>SC-H-STM-S-13</b> <u>Students will create and/or interpret graphs and equations to depict and analyze patterns of change.</u>  <b>SC-H-MF-S-4</b> <u>Students will create and analyze graphs, ensuring that they do not misrepresent results by using inappropriate scales or by failing to specify the axes clearly.</u>		<b>EL-11-DIU-S-7</b> Students will demonstrate understanding of informational passages/texts: d) use text features and visual information (e.g., maps, charts, graphs) to understand texts
Score Range 16-19			
Select two or more pieces of data from a simple data presentation		<b>MA-HS-DAP-S-DR3</b> Students will display the distribution, analyze patterns and describe relationships in paired data for univariate measurement data.  <b>MA-HS-AT-S-EI5</b> Students will solve an equation involving several variables for one variable in terms of the others.	
Understand basic scientific terminology			<b>EL-11-FF-S-3</b> Students will use a variety of reading strategies to understand vocabulary and texts: d) interpret the meaning of jargon, dialect, or specialized vocabulary in context
Find basic information in a brief body of text			<b>EL-6-DIU-S-7</b> Students will demonstrate understanding of informational passages/texts.  <b>EL-7-DIU-S-7</b> Students will demonstrate understanding of informational passages/texts.  <b>EL-8-DIU-S-7</b> Students will demonstrate understanding of informational passages/texts.

			<p><b>EL-9-DIU-S-7</b> Students will demonstrate understanding of informational passages/texts.</p> <p><b>EL-10-DIU-S-7</b> Students will demonstrate understanding of informational passages/texts.</p> <p><b>EL-11-DIU-S-7</b> Students will demonstrate understanding of informational passages/texts.</p>
Determine how the value of one variable changes as the value of another variable changes in a simple data presentation	<p><b>SC-4-MF-S-3</b> <u>Students will investigate</u> how the rate of vibration of an object changes the pitch (high-low) of the sound it produces.</p> <p><b>SC-5-ET-S-3</b> <u>Students will design and conduct investigations/experiments to determine the effects of altering variables</u> within electrical circuits and to draw conclusions about the transfer of energy (e.g., heat, light, sound, and magnetic effects ) within a system.</p> <p><b>SC-8-I-S-1</b> <u>Students will predict the effects of change on one or more components</u> within an ecosystem <u>by analyzing a variety of data.</u></p> <p><b>SC-H-STM-S-13</b> <u>Students will</u> create and/or <u>interpret graphs and equations to depict and analyze patterns of change.</u></p>	<p><b>MA-4-DAP-S-DR1</b> Students will explore line graphs to show change over time.</p> <p><b>MA-5-DAP-S-DR2</b> Students will explore line graphs to show change over time.</p> <p><b>MA-5-AT-S-PRF3</b> Students will describe input-output functions through pictures, tables and/or words</p> <p><b>MA-6-AT-S-PRF4</b> Students will explain how the change in one quantity affects change in another quantity (e.g., in tables or graphs, input/output tables).</p>	<p><b>EL-11-DIU-S-5</b> Students will make text-based inferences; state generalizations; draw conclusions based on what is read</p>
Score Range 20-23			
Select data from a complex data presentation (e.g., a table or graph with more than three variables; a phase diagram)		<p><b>MA-HS-AT-S-EI5</b> Students will solve an equation involving several variables for one variable in terms of the others.</p>	<p><b>EL-11-DIU-S-7</b> Students will demonstrate understanding of informational passages/texts: c) use information from texts to accomplish a specific task or to answer questions</p>
Compare or combine data from a simple data presentation (e.g., order or sum data from a table)		<p><b>MA-4-DAP-S-DR5</b> Students will construct data displays (e.g., pictographs, bar graphs, line plots, Venn diagrams, tables).</p>	<p><b>EL-11-DIU-S-7</b> Students will demonstrate understanding of informational passages/texts:</p>

		<p><b>MA-7-DAP-S-DR3</b> Students will compare data from various types of graphs.</p> <p><b>MA-8-DAP-S-DR3</b> Students will compare similar data from various types of graphs.</p> <p><b>MA-8-DAP-S-CD4</b> Students will compare sets of data.</p>	<p>c) use information from texts to accomplish a specific task or to answer questions</p> <p><b>EL-11-IT-S-4</b> Students will organize ideas within and across texts to show understanding of central ideas and interrelationships (e.g., charting, semantic mapping, graphic organizers, outlining).</p>
Translate information into a table, graph, or diagram	<p><b>SC-4-STM-S-8</b> <u>Students will write clear descriptions of their designs and experiments, present their findings (when appropriate) in tables and graphs (designed by the students).</u></p> <p><b>SC-5-EU-S-2</b> <u>Students will create/analyze/explain representations</u> that illustrate the circulation of water (evaporation and condensation) from the surface of the Earth, through the crust, oceans, and atmosphere (water cycle).</p> <p><b>SC-5-EU-S-6</b> <u>Students will use a variety of models and graphic representations to obtain and organize data</u> in order to compare the major components of our solar system.</p> <p><b>SC-5-I-S-4</b> <u>Students will analyze, create and describe visual representations of ecosystems and the interactions occurring within them.</u> Compare and critique pre-existing and student-constructed representations for accuracy, identifying strengths and limitations, insisting on the use of evidence to support decisions.</p> <p><b>SC-7-EU-S-5</b> <u>Students will model the layers of the Earth,</u> explain interactions between them and describe potential results of those interactions.</p>	<p><b>MA-4-DAP-S-DR5</b> Students will construct data displays (e.g., pictographs, bar graphs, line plots, Venn diagrams, tables).</p> <p><b>MA-4-DAP-S-DR3</b> Students will pose questions and choose an appropriate method to collect, organize and display student-collected data to answer the questions.</p> <p><b>MA-6-DAP-S-DR2</b> Students will collect, organize, construct, analyze and interpret data in a variety of graphical methods, including line plots, line graphs, circle graphs, bar graphs and stem-and-leaf plots.</p> <p><b>MA-6-DAP-S-DR3</b> Students will compare data from various types of graphs.</p> <p><b>MA-7-DAP-S-DR1</b> Students will collect, organize, construct, analyze and interpret data and data displays in a variety of graphical methods, including circle graphs, multiple line graphs, double bar graphs and double stem-and-leaf plots</p> <p><b>MA-7-DAP-S-DR4</b> Students will relate different representations of data (e.g., tables, graphs, diagrams, plots).</p> <p><b>MA-8-DAP-S-DR1</b> Students will collect, organize, construct, analyze and make inferences from data in a variety of graphical methods (e.g., drawings, tables/charts, pictographs, bar graphs, circle graphs, line plots, Venn diagrams, line graphs, stem-and-leaf plots, scatter plots, histograms, box-and-whiskers plots).</p>	<p><b>EL-11-FF-S-3</b> Students will use a variety of reading strategies to understand vocabulary and texts: a) formulate questions to guide reading (before, during and after reading)</p> <p><b>EL-11-DIU-S-7</b> Students will demonstrate understanding of informational passages/texts:  a) locate key ideas, information, facts or details b) use information from text to state and support central/main idea c) use information from texts to accomplish a specific task or to answer questions d) use text features and visual information (e.g., maps, charts, graphs) to understand texts</p> <p><b>EL-11-RRT-S-1</b> Students will use comprehension strategies while reading, listening to, or viewing literary and informational texts to analyze or evaluate content or make connections.</p> <p><b>EL-11-WC-S-2</b> Students will write to demonstrate learning and understanding of content knowledge (e.g., on-demand writing, research papers and essays, lab reports).</p>

	<p><b>SC-7-UD-S-3</b> <u>Students will describe the differences between learned and inherited behaviors and characteristics, and classify examples of each using tables, graphs or diagrams.</u></p> <p><b>SC-8-ET-S-8</b> <u>Students will graphically represent energy flow within an ecosystem to identify the existing relationships.</u></p> <p><b>SC-8-I-S-3</b> <u>Students will model the flow of energy and transfer of matter within ecosystems, communities and niches.</u></p> <p><b>SC-H-STM-S-3</b> <u>Students will construct and/or interpret diagrams that illustrate ionic and covalent bonding.</u></p> <p><b>SC-H-STM-S-13</b> <u>Students will create and/or interpret graphs and equations to depict and analyze patterns of change.</u></p> <p><b>SC-H-MF-S-1</b> <u>Students will design and conduct investigations involving the motion of objects and report the results in a variety of ways.</u></p> <p><b>SC-H-MF-S-4</b> <u>Students will create and analyze graphs, ensuring that they do not misrepresent results by using inappropriate scales or by failing to specify the axes clearly.</u></p> <p><b>SC-H-UD-S-4</b> <u>Students will graphically represent (e.g., pedigrees, punnet squares) and predict the outcomes of a variety of genetic combinations.</u></p>		
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Score Range 24-27			
Compare or combine data from two or more simple data presentations (e.g., categorize data from a table using a scale from another table)	<b>SC-H-MF-S-1</b> <u>Students will design and conduct investigations involving the motion of objects and report the results in a variety of ways.</u>		<b>EL-11-DCS-S-7</b> Students will make comparisons and synthesize information within and across texts (e.g., comparing themes, ideas, concept development, literary elements, events, genres).
Compare or combine data from a complex data presentation			<b>EL-11-DCS-S-7</b> Students will make comparisons and synthesize information within and across texts (e.g., comparing themes, ideas, concept development, literary elements, events, genres).
Interpolate between data points in a table or graph	<b>SC-H-STM-S-13</b> <u>Students will create and/or interpret graphs and equations to depict and analyze patterns of change.</u>	<b>MA-HS-AT-S-EI5</b> Students will solve an equation involving several variables for one variable in terms of the others.  <b>MA-HS-DAP-S-DR5</b> Students will display and discuss bivariate data where at least one variable is categorical.  <b>MA-HS-DAP-S-CDS5</b> Students will apply line-of-best fit equations for a set of two-variable data to make predictions.  <b>MA-HS-DAP-S-CDS6</b> Students will collect, organize and display bivariate data and use a curve of best fit as a model to make predictions.	<b>EL-11-DCS-S-7</b> Students will make comparisons and synthesize information within and across texts (e.g., comparing themes, ideas, concept development, literary elements, events, genres).  <b>EL-11-DIU-S-7</b> Students will demonstrate understanding of informational passages/texts:  a) locate key ideas, information, facts or details d) use text features and visual information (e.g., maps, charts, graphs) to understand texts
Determine how the value of one variable changes as the value of another variable changes in a complex data presentation	<b>SC-8-I-S-1</b> <u>Students will predict the effects of change on one or more components within an ecosystem by analyzing a variety of data.</u>  <b>SC-H-STM-S-13</b> <u>Students will create and/or interpret graphs and equations to depict and analyze patterns of change.</u>	<b>MA-HS-DAP-S-CDS3</b> Students will recognize how linear transformations of univariate data affect shape, center and spread.	<b>EL-11-RRT-S-1</b> Students will use comprehension strategies while reading, listening to, or viewing literary and informational texts to analyze or evaluate content or make connections.  <b>EL-11-DCS-S-8</b> Students will evaluate arguments, interpret and analyze information from multiple sources; for example, synthesize arguments or claims to discover the relationship between the



			parts, understand induction and deduction, determine unstated assumptions.
Identify and/or use a simple (e.g., linear) mathematical relationship between data	<b>SC-H-STM-S-13</b> <u>Students will create and/or interpret graphs and equations to depict and analyze patterns of change.</u>	<b>MA-HS-G-S-CG2</b> Students will describe a line by a linear equation.  <b>MA-HS-DAP-S-CDS7</b> Students will identify trends in bivariate data and find functions that model the data or transform the data, so that they can be modeled.	<b>EL-11-DIU-S-1</b> Students will use comprehension strategies (e.g., using prior knowledge, generating clarifying, literal and inferential questions, constructing sensory images, locating and using text features) while reading, listening to, or viewing literary and informational texts.  <b>EL-11-DIU-S-7</b> Students will demonstrate understanding of informational passages/texts:  a) locate key ideas, information, facts or details b) use information from text to state and support central/main idea c) use information from texts to accomplish a specific task or to answer questions d) use text features and visual information (e.g., maps, charts, graphs) to understand texts
Analyze given information when presented with new, simple information			<b>EL-11-RRT-S-1</b> Students will use comprehension strategies while reading, listening to, or viewing literary and informational texts to analyze or evaluate content or make connections.
Score Range 28-32			
Compare or combine data from a simple data presentation with data from a complex data presentation			<b>EL-11-DCS-S-7</b> Students will make comparisons and synthesize information within and across texts (e.g., comparing themes, ideas, concept development, literary elements, events, genres).
Identify and/or use a complex (e.g., nonlinear) mathematical relationship between data	<b>SC-H-STM-S-13</b> <u>Students will create and/or interpret graphs and equations to depict and analyze patterns of change.</u>	<b>MA-HS-G-S-CG2</b> Students will describe a line by a linear equation.	<b>EL-11-DCS-S-7</b> Students will make comparisons and synthesize information within and across texts (e.g., comparing themes, ideas, concept development, literary elements, events, genres).

		<b>MA-HS-DAP-S-CDS7</b> Students will identify trends in bivariate data and find functions that model the data or transform the data, so that they can be modeled.	<b>EL-11-DIU-S-7</b> Students will demonstrate understanding of informational passages/texts:  a) locate key ideas, information, facts or details d) use text features and visual information (e.g., maps, charts, graphs) to understand texts
Extrapolate from data points in a table or graph	<b>SC-H-STM-S-13</b> Students will create and/or interpret graphs and equations to depict and analyze patterns of change Students will use evidence/data from chemical reactions to predict the effects of changes in variables (concentration, temperature, properties of reactants, surface area and catalysts).	<b>MA-HS-NPO-S-NO6</b> Students will describe and extend arithmetic and geometric sequences.  <b>MA-HS-AT-S-EI5</b> Students will solve an equation involving several variables for one variable in terms of the others.  <b>MA-HS-DAP-S-DR5</b> Students will display and discuss bivariate data where at least one variable is categorical.  <b>MA-HS-DAP-S-CDS5</b> Students will apply line-of-best fit equations for a set of two-variable data to make predictions.  <b>MA-HS-DAP-S-CDS6</b> Students will collect, organize and display bivariate data and use a curve of best fit as a model to make predictions.	<b>EL-11-DCS-S-7</b> Students will make comparisons and synthesize information within and across texts (e.g., comparing themes, ideas, concept development, literary elements, events, genres).  <b>EL-11-DIU-S-7</b> Students will demonstrate understanding of informational passages/texts:  a) locate key ideas, information, facts or details d) use text features and visual information (e.g., maps, charts, graphs) to understand texts
Score Range 33-36			
Compare or combine data from two or more complex data presentations			<b>EL-11-DCS-S-7</b> Students will make comparisons and synthesize information within and across texts (e.g., comparing themes, ideas, concept development, literary elements, events, genres).  <b>EL-11-DIU-S-7</b> Students will demonstrate understanding of informational passages/texts:  a) locate key ideas, information, facts or details

			d) use text features and visual information (e.g., maps, charts, graphs) to understand texts
Analyze given information when presented with new, complex information			<p><b>EL-11-DCS-S-7</b> Students will make comparisons and synthesize information within and across texts (e.g., comparing themes, ideas, concept development, literary elements, events, genres).</p> <p><b>EL-11-DIU-S-7</b> Students will demonstrate understanding of informational passages/texts:</p> <p>a) locate key ideas, information, facts or details d) use text features and visual information (e.g., maps, charts, graphs) to understand texts</p>

Science  
POS/CRS Alignment  
Strand 2--Scientific Investigation (SIN)

College Readiness Standards	Science Program of Studies	Math Program of Studies	Language Arts Program of Studies
Score Range 13-15			
Score Range 16-19			
Understand the methods and tools used in a simple experiment	<p><b>SC-4-ET-S-6</b>  <u>Students will design and conduct investigations/experiments to compare properties of conducting and non-conducting materials (both heat and electrical), documenting and communicating (speak, draw, write, demonstrate) observations, designs, procedures and results of scientific investigations.</u></p> <p><b>SC-5-STM-S-1</b>  <u>Students will use appropriate tools (e.g., balance, thermometer, graduated cylinder) and observations to describe physical properties of substances (e.g., boiling point, solubility, density) and to classify materials.</u></p> <p><b>SC-6-MF-S-1</b>  <u>Students will use observations and appropriate tools (e.g., timer, meter stick, balance, spring scale) to document the position and motion of objects.</u></p> <p><b>SC-7-MF-S-1</b>  <u>Students will use appropriate tools and technology (e.g., timer, meter stick, balance, spring scale) to investigate the position, speed and motion of objects.</u></p> <p><b>SC-H-STM-S-12</b>  <u>Students will design and conduct experiments to determine the conductivity of various materials.</u></p>	<p><b>MA-4-M-S-MPA7</b>  Students will choose and use appropriate tools (e.g., thermometer, scale, balance, clock, meter stick) for specific measurement tasks.</p> <p><b>MA-7-DAP-S-ES2</b>  Students will explore how sample size affects the reliability of the outcome.</p> <p><b>MA-HS-DAP-S-ES2</b>  Students will know the characteristics of well-designed studies, including the role of randomization in surveys and experiments</p>	<p><b>EL-11-WC-S-2</b>  Students will write to demonstrate learning and understanding of content knowledge (e.g., on-demand writing, research papers and essays, lab reports).</p> <p><b>EL-11-WC-S-2</b>  Students will write to demonstrate learning and understanding of content knowledge (e.g., on-demand writing, research papers and essays, lab reports):</p> <ul style="list-style-type: none"> <li>analyze and communicate through authentic transactive purposes for writing (e.g., explaining, persuading, analyzing, synthesizing, evaluating)</li> </ul> <p><b>EL-11-WC-S-5</b>  Students will develop ideas that are logical, justified and suitable for a variety of purposes, audiences and forms of writing.</p>

	<b>SC-H-MF-S-1</b> <u>Students will design and conduct investigations</u> involving the motion of objects and report the results in a variety of ways.		
Score Range 20-23			
Understand the methods and tools used in a moderately complex experiment	<b>SC-7-I-S-5</b> <u>Students will design and conduct investigations</u> of changes to abiotic and biotic factors in ecosystems, <u>document and communicate observations, procedures, results and conclusions.</u>  <b>SC-H-STM-S-12</b> <u>Students will design and conduct experiments</u> to determine the conductivity of various materials.  <b>SC-H-MF-S-1</b> <u>Students will design and conduct investigations</u> involving the motion of objects <u>and report the results in a variety of ways.</u>	<b>MA-HS-DAP-S-ES4</b> Students will evaluate published reports that are based on interpretations of data by examining the design of the study, the appropriateness of the data analysis and the validity of the conclusions.	<b>EL-11-WC-S-2</b> Students will write to demonstrate learning and understanding of content knowledge (e.g., on-demand writing, research papers and essays, lab reports).
Understand a simple experimental design	<b>SC-6-UD-S-4</b> <u>Students will design and conduct scientific investigations</u> to make inferences about factors influencing the behavior of organisms, and compare the results with those of investigations done by others.  <b>SC-7-I-S-5</b> <u>Students will design and conduct investigations</u> of changes to abiotic and biotic factors in ecosystems, <u>document and communicate observations, procedures, results and conclusions.</u>  <b>SC-H-STM-S-5</b> <u>Students will identify and test variables</u> that affect reaction rates.  <b>SC-H-STM-S-12</b> <u>Students will design and conduct experiments</u> to determine the conductivity of various materials.	<b>MA-4-DAP-S-DR3</b> Students will pose questions and choose an appropriate method to collect, organize and display student-collected data to answer the questions.  <b>MA-5-DAP-S-DR1</b> Students will choose and use appropriate means to collect and represent data.  <b>MA-5-DAP-S-DR3</b> Students will pose questions and choose an appropriate method to collect, organize and display student-collected data to answer the questions.  <b>MA-8-DAP-S-DR2</b> Students will select an appropriate graph to represent data and justify its use.	<b>EL-11-WC-S-2</b> Students will write to demonstrate learning and understanding of content knowledge (e.g., on-demand writing, research papers and essays, lab reports).

	<b>SC-H-MF-S-1</b> <u>Students will design and conduct investigations</u> involving the motion of objects <u>and report the results in a variety of ways.</u>	<b>MA-HS-DAP-S-ES6</b> Students will design and conduct simple experiments or investigations to collect data to answer student generated questions.	
Identify a control in an experiment	<b>SC-H-STM-S-12</b> <u>Students will design and conduct experiments</u> to determine the conductivity of various materials  <b>SC-H-MF-S-1</b> Students will design and conduct investigations involving the motion of objects <u>and report the results in a variety of ways.</u>  <b>SC-5-MF-S-3</b> <u>Students will design and conduct experiments to examine the effects of variables</u> on the straight line motion of objects. Analyze, review, and critique each other's experiments.		
Identify similarities and differences between experiments	<b>SC-8-MF-S-3</b> <u>Students will</u> investigate motion of objects to generate and experimentally test predictions/conclusions. <u>Compare and critique the results of others for accuracy, identifying strengths and weaknesses in the experiment, insisting on the use of evidence to support decisions.</u>		
Score Range 24-27			
Understand the methods and tools used in a complex experiment	<b>SC-H-STM-S-5</b> <u>Students will identify and test variables</u> that affect reaction rates.  <b>SC-H-STM-S-12</b> <u>Students will design and conduct experiments</u> to determine the conductivity of various materials.		
Understand a complex experimental design	<b>SC-H-STM-S-12</b> <u>Students will design and conduct experiments</u> to determine the conductivity of various materials.		
Predict the results of an additional trial or measurement	<b>SC-5-MF-S-3</b> <u>Students will design and conduct experiments to examine the</u>		

in an experiment	<p><u>effects of variables on the straight line motion of objects. Analyze, review, and critique each other's experiments.</u></p> <p><b>SC-8-MF-S-2</b> <u>Students will explain and experimentally verify how Newton's Laws show that forces between objects affect their motion, allowing future positions to be predicted from their present speeds and positions.</u></p> <p><b>SC-H-STM-S-12</b> <u>Students will design and conduct experiments to determine the conductivity of various materials.</u></p> <p><b>SC-H-MF-S-1</b> <u>Students will design and conduct investigations involving the motion of objects and report the results in a variety of ways.</u></p>		
Determine the experimental conditions that would produce specified results	<p><b>SC-5-ET-S-4</b> <u>Students will design and conduct investigations/experiments to identify predictable patterns of interaction between light and matter (e.g. some materials are more reflective, different liquids refract differently, effects of multiple or differing light sources).</u></p> <p><b>SC-8-MF-S-2</b> <u>Students will explain and experimentally verify how Newton's Laws show that forces between objects affect their motion, allowing future positions to be predicted from their present speeds and positions.</u></p> <p><b>SC-8-MF-S-3</b> <u>Students will investigate motion of objects to generate and experimentally test predictions/conclusions. Compare and critique the results of others for accuracy, identifying strengths and weaknesses in the experiment, insisting on the use of evidence to support decisions.</u></p>		

	<p><b>SC-H-STM-S-12</b>  <u>Students will design and conduct experiments</u> to determine the conductivity of various materials.</p> <p><b>SC-H-MF-S-1</b>  <u>Students will design and conduct investigations</u> involving the motion of objects <u>and report the results in a variety of ways.</u></p>		
Score Range 28-32			
Determine the hypothesis for an experiment			
Identify an alternate method for testing a hypothesis			
Score Range 33-36			
Understand precision and accuracy issues	<p><b>SC-8-MF-S-3</b>  <u>Students will investigate motion of objects to generate and experimentally test predictions/conclusions. Compare and critique the results of others for accuracy, identifying strengths and weaknesses in the experiment, insisting on the use of evidence to support decisions.</u></p>	<p><b>MA-HS-M-S-MPA2</b>  Students will analyze precision, accuracy and approximate error in measurement situations.</p> <p><b>MA-HS-DAP-S-ES5</b>  Students will explain the impact of sampling methods, bias and the phrasing of questions asked during data collection and the conclusions that can be justified.</p>	<p><b>EL-11-DCS-S-7</b>  Students will evaluate the accuracy of information presented in texts.</p> <p><b>EL-11-DCS-S-8</b>  Students will evaluate arguments, interpret and analyze information from multiple sources; for example, synthesize arguments or claims to discover the relationship between the parts, understand induction and deduction, determine unstated assumptions.</p> <p><b>EL-11-DCS-S-9</b>  Students will evaluate claims and evidences.</p> <p><b>EL-11-DCS-10</b>  Students will evaluate the range and quality of evidence used to support or oppose an argument.</p> <p><b>EL-11-WP-S-4</b>  Students will revise: <ul style="list-style-type: none"> <li>confer to determine where to add, delete, rearrange, define/redefine or elaborate content so that writing is</li> </ul> </p>



			<p>coherent and effective for intended audience, then make revisions</p> <ul style="list-style-type: none"> <li>• identify and develop topic sentences, making sure ideas are supported appropriately with relevant details and that sentences are in sequential order; insert new sentences and delete unnecessary ones; develop effective introductions and conclusions; eliminate redundant words; choose the most precise words available</li> </ul>
Predict how modifying the design or methods of an experiment will affect results	<p><b>SC-H-STM-S-12</b>  <u>Students will design and conduct experiments</u> to determine the conductivity of various materials.</p> <p><b>SC-H-MF-S-1</b>  <u>Students will design and conduct investigations</u> involving the motion of objects <u>and report the results in a variety of ways.</u></p>		
Identify an additional trial or experiment that could be performed to enhance or evaluate experimental results	<p><b>SC-H-STM-S-12</b>  <u>Students will design and conduct experiments</u> to determine the conductivity of various materials.</p> <p><b>SC-H-MF-S-1</b>  <u>Students will design and conduct investigations</u> involving the motion of objects <u>and report the results in a variety of ways.</u></p>		

Science  
POS/CRS Alignment  
Strand 3--Evaluation of Models, Inferences, and Experimental Results (EMI)

College Readiness Standards	Science Program of Studies	Math Program of Studies	Language Arts Program of Studies
Score Range 13-15			
Score Range 16-19			
Score Range 20-23			
Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model	<p><b>SC-4-EU-S-2</b> <u>Students will analyze weather data to make predictions</u> about future weather.</p> <p><b>SC-5-MF-S-4</b> <u>Students will predict, and support with evidence/justification,</u> changes in the motion of an object related to its mass or the amount of force acting on it.</p> <p><b>SC-6-MF-S-2</b> <u>Students will use graphical and observational data to make inferences, predictions and draw conclusions</u> about the motion of an object as related to the mass or force involved.</p> <p><b>SC-6-BC-S-5</b> <u>Students will generate questions about the diversity of species, then collect information from a variety of sources to formulate explanations supported by scientific evidence.</u></p> <p><b>SC-7-BC-S-3</b> <u>Students will use information</u> from the fossil record <u>to investigate changes</u> in organisms and their environments <u>to make inferences</u> about past life forms and environmental conditions.</p> <p><b>SC-7-ET-S-2</b> <u>Students will model, explain and analyze</u> the flow of energy in</p>	<p><b>MA-4-DAP-S-CD1</b> Students will draw conclusions based on data.</p> <p><b>MA-5-DAP-S-CD1</b> Students will draw conclusions and make predictions based on data.</p> <p><b>MA-6-DAP-S-CD1</b> Students will make predictions, draw conclusions and verify results from statistical data and probability experiments.</p>	<p><b>EL-6-FF-S-2</b> Students will make predictions while reading.</p> <p><b>EL-6-IT-S-6</b> Students will demonstrate understanding of informational passages/texts:</p> <p>c) use evidence/references from the text to state central/main idea and details that support them; explain the importance of details in a passage</p> <p><b>EL-7-IT-S-6</b> Students will demonstrate understanding of informational passages/texts:</p> <p>c) use evidence/references from the text to state central/main idea and details that support them; explain the importance of details in a passage</p> <p><b>EL-8-IT-S-6</b> Students will demonstrate understanding of informational passages/texts:</p> <p>c) understand cause-effect inferences</p> <p>d) identify an author's arguments and identify evidence from the passage to support the author's argument</p>

	<p>ecosystems <u>and draw conclusions</u> about the role of organisms in an ecosystem.</p> <p><b>SC-7-I-S-3</b>  <u>Students will identify a species which has become extinct and analyze data/evidence to infer the contributing factors</u> which led to extinction.</p>		<p><b>EL-11-DCS-S-4</b>  Students will form and support warranted judgments/opinions/conclusions about central ideas.</p> <p><b>EL-11-DIU-S-5</b>  Students will make text-based inferences; state generalizations; draw conclusions based on what is read.</p>
Identify key issues or assumptions in a model	<p><b>SC-4-EU-S-6</b>  <u>Students will explore, design and evaluate a number of models (e.g., physical, analogous, conceptual) of Earth-Sun and Earth-Sun-Moon systems for benefits, limitations and accuracy (e.g., scale, proportional relationships).</u></p> <p><b>SC-6-EU-S-2</b>  <u>Students will investigate, create and identify the limitations of models which can be used to substantiate and predict the actual results</u> (e.g. moon phases, seasons, eclipses) of the interactions of the sun, moon and Earth.</p> <p><b>SC-7-EU-S-4</b>  <u>Students will analyze the evidence used to infer the composition of the Earth's interior and evaluate the models based upon that evidence.</u></p> <p><b>SC-8-I-S-3</b>  <u>Students will model</u> the flow of energy and transfer of matter within ecosystems, communities and niches.</p> <p><b>SC-H-EU-S-3</b>  <u>Students will analyze the supporting evidence</u> for the nebular theory of formation of the solar system.</p> <p><b>SC-H-EU-S-4</b>  <u>Students will analyze the supporting evidence</u> for the Big Bang theory of formation of the universe.</p>	<p><b>MA-HS-DAP-S-CDS12</b>  Students will evaluate reports based on data published in the media by considering the source of the data, the design of the study and the way the data are displayed and analyzed.</p>	<p><b>EL-6-DCS-S-9</b>  Students will evaluate arguments, interpret, and analyze information from multiple sources by synthesizing arguments or claims to discover the relationship between the parts.</p> <p><b>EL-8-DCS-S-9</b>  Students will evaluate the quality of evidence used to support or oppose an argument.</p> <p><b>EI-9-DCS-9</b>  Students will evaluate arguments, interpret and analyze information from multiple sources; for example, synthesize arguments or claims to discover the relationship between the parts, understand induction and deduction, determine unstated assumptions.</p>

	<b>SC-H-BC-S-1</b> <u>Students will identify evidence of change in species using fossils, DNA sequences, anatomical similarities, physiological similarities and embryology.</u>		
Score Range 24-27			
Select a simple hypothesis, prediction, or conclusion that is supported by two or more data presentations or models		<b>MA-HS-DAP-S-ES4</b> Students will evaluate published reports that are based on interpretations of data by examining the design of the study, the appropriateness of the data analysis and the validity of the conclusions.	<b>EL-8-DCS-S-8</b> Students will evaluate arguments, interpret and analyze information from multiple sources by synthesizing arguments or claims to discover the relationship between the parts.  <b>EL-9-DCS-8</b> Students will evaluate the accuracy of information presented in texts.  <b>EI-9-DCS-9</b> Students will evaluate arguments, interpret and analyze information from multiple sources; for example, synthesize arguments or claims to discover the relationship between the parts, understand induction and deduction, determine unstated assumptions.
Determine whether given information supports or contradicts a simple hypothesis or conclusion, and why	<b>SC-8-I-S-4</b> <u>Students will evaluate the risks and benefits of human actions affecting the environment and identify which populations will be harmed or helped. Use a variety of data/ sources to support or defend a position related to a proposed action, both orally and in writing. Analyze the validity of other arguments.</u>  <b>SC-H-MS-7</b> <u>Students will create conceptual and mathematical models of motion and test them against real-life phenomena.</u>  <b>SC-H-EU-S-3</b> <u>Students will analyze the supporting evidence for the nebular theory of formation of the solar system.</u>  <b>SC-H-EU-S-4</b> <u>Students will analyze the supporting evidence for the Big Bang theory of formation of the universe.</u>	<b>MA-HS-DAP-S-ES4</b> Students will evaluate published reports that are based on interpretations of data by examining the design of the study, the appropriateness of the data analysis and the validity of the conclusions.	<b>EL-7-DCS-S-11</b> Students will evaluate the quality of evidence used to support or oppose an argument.  <b>EL-7-DCS-S-13</b> Students will recognize faulty reasoning and false premises in an argument.  <b>EL-9-IT-S-5</b> Students will demonstrate understanding of informational passages/texts:  d) use text references to support conclusions about what is read; for example, an author's opinion about a subject  g) accept or reject an argument based on evidence

	<p><b>SC-H-I-S-4</b>  <u>Students will examine existing models of global population growth and the factors affecting population change (e.g., geography, diseases, natural events, birth/death rates). Propose and defend solutions to identified problems of population change.</u></p>		<p><b>EL-10-IT-S-6</b>  Students will demonstrate understanding of informational passages/texts:</p> <p>d) use text references to support conclusions about what is read; for example, an author's opinion about a subject</p> <p>e) understand cause-effect inferences</p> <p>g) accept or reject an argument based on evidence</p>
Identify strengths and weaknesses in one or more models	<p><b>SC-4-EU-S-6</b>  <u>Students will explore, design and evaluate a number of models (e.g., physical, analogous, conceptual) of Earth-Sun and Earth-Sun-Moon systems for benefits, limitations and accuracy (e.g., scale, proportional relationships).</u></p> <p><b>SC-5-EU-S-8</b>  <u>Students will explain why scale models are important tools for understanding a number of phenomena (e.g., solar system, watersheds, earth's atmosphere) but are not always easy to construct or require trade-offs in other aspects of the model (e.g. distance vs. size).</u></p> <p><b>SC-7-BC-S-4</b>  <u>Students will compare the results from a variety of investigations (based on similar hypotheses) to identify differences between their outcomes/conclusions and propose reasonable explanations for those discrepancies.</u></p> <p><b>SC-8-EU-S-4</b>  <u>Students will discuss and identify the strengths and limitations of a variety of physical and conceptual scientific models.</u></p> <p><b>SC-H-MF-S-7</b>  <u>Students will create conceptual and mathematical models of motion and test them against real-life phenomena.</u></p>		<p><b>EL-7-DCS-S-8</b>  Students will evaluate the accuracy of information presented in texts.</p> <p><b>EL-9-IT-S-5</b>  Students will demonstrate understanding of informational passages/texts:</p> <p>d) use text references to support conclusions about what is read; for example, an author's opinion about a subject</p> <p>g) accept or reject an argument based on evidence</p> <p><b>EL-10-IT-S-6</b>  Students will demonstrate understanding of informational passages/texts:</p> <p>d) use text references to support conclusions about what is read; for example, an author's opinion about a subject</p> <p>e) understand cause-effect inferences</p> <p>g) accept or reject an argument based on evidence</p>

	<p><b>SC-H-EU-S-1</b>  <u>Students will compare methods used to measure the ages of geologic features.</u></p> <p><b>SC-H-EU-S-3</b>  <u>Students will analyze the supporting evidence for the nebular theory of formation of the solar system.</u></p> <p><b>SC-H-EU-S-4</b>  <u>Students will analyze the supporting evidence for the Big Bang theory of formation of the universe.</u></p> <p><b>SC-H-I-S-4</b>  <u>Students will examine existing models of global population growth and the factors affecting population change (e.g., geography, diseases, natural events, birth/death rates). Propose and defend solutions to identified problems of population change.</u></p>		
Identify similarities and differences between models	<p><b>SC-7-BC-S-4</b>  <u>Students will compare the results from a variety of investigations (based on similar hypotheses) to identify differences between their outcomes/conclusions and propose reasonable explanations for those discrepancies.</u></p> <p><b>SC-8-EU-S-4</b>  <u>Students will discuss and identify the strengths and limitations of a variety of physical and conceptual scientific models.</u></p> <p><b>SC-H-MF-S-7</b>  <u>Students will create conceptual and mathematical models of motion and test them against real-life phenomena.</u></p> <p><b>SC-H-I-S-4</b>  <u>Students will examine existing models of global population growth and the factors affecting population change (e.g., geography, diseases, natural events, birth/death rates). Propose and defend solutions to identified problems of</u></p>	<p><b>MA-HS-DAP-S-ES1</b>  Students will understand and explain the differences among various kinds of studies (e.g., randomized experiments and observational studies) and which types of inferences can be legitimately be drawn from each.</p>	

	<u>population change.</u>		
Determine which model(s) is (are) supported or weakened by new information	<p><b>SC-H-MF-S-7</b>  <u>Students will create conceptual and mathematical models of motion and test them against real-life phenomena.</u></p> <p><b>SC-H-I-S-4</b>  <u>Students will examine existing models of global population growth and the factors affecting population change (e.g., geography, diseases, natural events, birth/death rates). Propose and defend solutions to identified problems of population change.</u></p>	<p><b>MA-HS-DAP-S-ES1</b>  Students will understand and explain the differences among various kinds of studies (e.g., randomized experiments and observational studies) and which types of inferences can be legitimately be drawn from each.</p>	<p><b>EL-7-DCS-S-13</b>  Students will recognize faulty reasoning and false premises in an argument.</p> <p><b>EL-9-IT-S-5</b>  Students will demonstrate understanding of informational passages/texts:</p> <p>g) accept or reject an argument based on evidence</p> <p><b>EL-10-IT-S-6</b>  Students will demonstrate understanding of informational passages/texts:</p> <p>d) use text references to support conclusions about what is read; for example, an author's opinion about a subject</p> <p>e) understand cause-effect inferences</p> <p>g) accept or reject an argument based on evidence</p> <p><b>EL-10-DCS-S-10</b>  Students will identify claims and evidences and evaluate connections among evidences and inferences.</p> <p><b>EL-11-DCS-S-9</b>  Students will evaluate claims and evidences.</p> <p><b>EL-11-DCS-10</b>  Students will evaluate the range and quality of evidence used to support or oppose an argument.</p>
Select a data presentation or a model that supports or contradicts a hypothesis, prediction or conclusion	<p><b>SC-H-MF-S-7</b>  <u>Students will create conceptual and mathematical models of motion and test them against real-life phenomena.</u></p>	<p><b>MA-7-DAP-S-DR6</b>  Students will make decisions about how misleading representations affect interpretations and conclusions about data (e.g. changing the scale on a graph).</p>	<p><b>EL-7-DCS-S-11</b>  Students will evaluate the quality of evidence used to support or oppose an argument.</p>

	<b>SC-H-I-S-4</b> <u>Students will examine existing models of global population growth and the factors affecting population change (e.g., geography, diseases, natural events, birth/death rates). Propose and defend solutions to identified problems of population change.</u>	<b>MA-8-DAP-S-DR4</b> Students will relate different representations of data (e.g., tables, graphs, diagrams, plots) and explain how misleading representations affect interpretations and conclusions about data.	
Score Range 28-32			
Select a complex hypothesis, prediction, or conclusion that is supported by a data presentation or model		<b>MA-HS-DAP-S-ES4</b> Students will evaluate published reports that are based on interpretations of data by examining the design of the study, the appropriateness of the data analysis and the validity of the conclusions.	<b>EL-10-IT-S-6</b> Students will demonstrate understanding of informational passages/texts:  d) use text references to support conclusions about what is read; for example, an author's opinion about a subject  e) understand cause-effect inferences  g) accept or reject an argument based on evidence  <b>EL-11-IT-S-6</b> Students will demonstrate understanding of informational passages/texts:  d) use text references to support conclusions about what is read; for example, author's opinion about a subject  e) accept or reject arguments using supporting evidence
Determine whether new information supports or weakens a model, and why	<b>SC-H-STM-S-6</b> <u>Students will use evidence/data from chemical reactions to predict the effects of changes in variables (concentration, temperature, properties of reactants, surface area and catalysts).</u>  <b>SC-H-UD-S-11</b> <u>Students will identify and investigate areas of current research/innovation in biological science. Make inferences/predictions of the effects of this research on society and/or the environment and support or defend these</u>		<b>EL-10-IT-S-6</b> Students will demonstrate understanding of informational passages/texts:  d) use text references to support conclusions about what is read; for example, an author's opinion about a subject  e) understand cause-effect inferences  g) accept or reject an argument based on evidence



	<u>predictions with scientific data.</u>		<p><b>EL-11-IT-S-6</b> Students will demonstrate understanding of informational passages/texts:</p> <p>d) use text references to support conclusions about what is read; for example, author's opinion about a subject</p> <p>e) accept or reject arguments using supporting evidence</p> <p><b>EL-11-DCS-S-7</b> Students will make comparisons and synthesize information within and across texts (e.g., comparing themes, ideas, concept development, literary elements, events, genres).</p>
Use new information to make a prediction based on a model			
Score Range 33-36			
Select a complex hypothesis, prediction, or conclusion that is supported by two or more data presentations or models			<p><b>EL-11-IT-S-6</b> Students will demonstrate understanding of informational passages/texts:</p> <p>d) use text references to support conclusions about what is read; for example, author's opinion about a subject</p> <p>e) accept or reject arguments using supporting evidence</p>
Determine whether given information supports or contradicts a complex hypothesis or conclusion, and why	<p><b>SC-H-STM-S-6</b> <u>Students will use evidence/data from chemical reactions to predict the effects of changes in variables (concentration, temperature, properties of reactants, surface area and catalysts).</u></p> <p><b>SC-H-UD-S-11</b> <u>Students will identify and investigate areas of current research/innovation in biological science. Make inferences/predictions of the effects of this research on society and/or the environment and support or defend these predictions with scientific data.</u></p>		<p><b>EL-10-IT-S-6</b> Students will demonstrate understanding of informational passages/texts:</p> <p>d) use text references to support conclusions about what is read; for example, an author's opinion about a subject</p> <p>e) understand cause-effect inferences</p> <p>g) accept or reject an argument based on evidence</p> <p><b>EL-11-IT-S-6</b> Students will demonstrate understanding of informational</p>

			<p>passages/texts:</p> <p>d) use text references to support conclusions about what is read; for example, author's opinion about a subject</p> <p>e) accept or reject arguments using supporting evidence</p> <p><b>EL-11-DCS-S-7</b> Students will make comparisons and synthesize information within and across texts (e.g., comparing themes, ideas, concept development, literary elements, events, genres).</p>
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# **Science Test** **EPAS Test Breakdown** **Supplemental Information**

**What does the Science Test Measure?** The Science Test is “designed to assess the knowledge and thinking skills, processes, and strategies students acquire in...science courses. These skills include analyzing and interpreting data, comparing experimental designs and methods, comparing assumptions underlying experiments, making generalizations, and identifying and evaluating conflicting points of view....The intent is to present students with a situation to engage their reasoning skills...” The Science Test is not a test of content knowledge; however, the questions presented are in the context of science.

Science Test		
EXPLORE	<b>EXPLORE Science Test Design</b> —30 minutes to complete 6 sets of questions and answer 28 multiple choice questions	
	<b>Science Context</b> —Life, Earth/Space, Physical	
	<b>Content Area (Strands)</b> <span style="float: right;"><b>Percent of Questions</b></span>	
	<b>Data Representation</b> —graph reading, interpretation of scatterplots , and interpretation of information presented in tables	43%
	<b>Research Summaries</b> —questions focus upon the design of experiments and the interpretation of experimental results	36%
	<b>Conflicting Viewpoints</b> —questions focus upon the understanding, analysis, comparison, and evaluation of the alternative viewpoints	21%
PLAN	<b>PLAN Science Test Design</b> —25 minutes to complete 5 sets of questions and answer 30 multiple choice questions	
	<b>Science Context</b> —Life, Earth/Space, Physical, Chemistry	
	<b>Content Area (Strands)</b> <span style="float: right;"><b>Percent of Questions</b></span>	
	<b>Data Representation</b> -- graph reading, interpretation of scatterplots , and interpretation of information presented in tables	33%
	<b>Research Summaries</b> —questions focus upon the design of experiments and the interpretation of experimental results	47%
	<b>Conflicting Viewpoints</b> —questions focus upon the understanding, analysis, comparison, and evaluation of the alternative viewpoints	20%

ACT	<b>ACT Science Test Design</b> —35 minutes to complete 7 sets of questions and answer 40 multiple choice questions	
	<b>Science Context</b> —Life, Earth/Space, Physical, Chemistry	
	<b>Content Area (Strands)</b>	<b>Percent of Questions</b>
	<b>Data Representation</b> — graph reading, interpretation of scatterplots , and interpretation of information presented in tables	38%
	<b>Research Summaries</b> —questions focus upon the design of experiments and the interpretation of experimental results	45%
	<b>Conflicting Viewpoints</b> —questions focus upon the understanding, analysis, comparison, and evaluation of the alternative viewpoints	17%

### Science Strands

Interpretation of Data (IOD)

Scientific Investigation (SIN)

Evaluation of Models, Inferences, and Experimental Results (EMI)

The Science Test contains questions that fall under three cognitive levels.

- Understanding—these questions are based upon the comprehension of the information presented.
- Analysis—these questions relate a number of various components to one another.
- Generalization—these questions ask one to think beyond the presented material.

### Reference

*The ACT: Connecting College Readiness Standards to the Classroom for Science Teachers.* ACT, Inc., Iowa City, IA. 2005: 12-13.